Persistent high stroke mortality in Bangladeshi populations

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Novel hypotheses to explain this need testing urgently

Censuses in 1981, 1991,[1–3] and 2001 (Wild et al. Persistence of substantial inequalities in cardiovascular disease mortality by country of birth in England and Wales 2001-2003. Unpublished manuscript). have shown that, among Bangladeshi-born men living in the United Kingdom, the standardised mortality ratio for stroke is two to three times the population average, with less marked but important excesses in Bangladeshi-born women. There has been little progress in understanding the reasons for this variation, let alone in identifying approaches to improve outcomes. Lessons learnt about stroke among British Bangladeshis may well apply to other populations at high risk, including Indians and Pakistanis, whose excess stroke mortality is not quite so high. In addition, such evidence could be highly relevant to reducing health inequalities.

Is the excess mortality from stroke in Bangladeshis explained by a higher case fatality ratio? Interim analysis of data from the south London stroke register shows no age adjusted difference in survival between Bangladeshis and white Europeans (albeit based on a small population), but does find an almost doubled age adjusted incidence of stroke in Bangladeshis (Smeeton N, personal communication of unpublished data from Stewart et al[4]). Thus, these mortality data seem to reflect a real excess that cannot be explained by a higher case fatality.

To what extent, then, can these differences be explained by an excess of risk factors for stroke? Hypertension is the most important potential explanation, but studies conducted in east London and Newcastle found Bangladeshi adults to have on average a mean systolic blood pressure that is 10 mm Hg lower than that of white Europeans.[5 6] These regional findings have been confirmed by national data from the Health Survey for England 1999 and a recent systematic review.[7 8] Total and low density lipoprotein cholesterol concentrations are also comparatively low among Bangladeshis.[5 6] Bangladeshi men tend, however, to have a high prevalence of diabetes, smoking, physical inactivity, and high serum triglyceride concentrations, and low serum high density lipoprotein cholesterol concentrations.[2 5–7] For women, the burden from these risk factors is also high, except for smoking, which is uncommon.[2 6] Bangladeshis are also among the poorest of Britain's populations.

The Framingham stroke model and European SCORE model both predict comparatively low rates of stroke and cerebrovascular disease. For example, in Bangladeshi men the Framingham model predicts the incidence of stroke to be 52% (95% confidence interval 35% to 77%) of that for the white European population.[3] We need to look beyond classic stroke risk factors.

We suggest four specific lines of investigation that warrant consideration—squatting and straining at stool, vitamin D deficiency, infection, and the combined impact of smoking and tobacco chewing. Chakrabarti's work on three groups—patients with stroke, healthy volunteers, and hypertensive patients—has identified squatting as a potential causal or precipitating factor for stroke.[9] Squatting is a fairly common posture among South Asians and is known to raise blood pressure by about 4-8 mm Hg with a sustained effect during the period of squatting; importantly, this blood pressure rise is greatest in the central vasculature.

Vitamin D deficiency is very common among Bangladeshis in London, because of a diet lacking fish, ghee, and eggs among both sexes and lack of exposure to sunlight, particularly among women.[10] Vitamin D deficiency may raise the risk of stroke by increasing insulin resistance and hypertension, or may worsen outcomes after stroke by impairing neuroprotective mechanisms.

Chronic inflammation is a well recognised risk factor for stroke. A recent large case series reported that the incidences of both myocardial infarction and stroke were significantly raised in the few days after acute infection, particularly of the respiratory tract.[11] Many Bangladeshis in the UK live in overcrowded households, with consequent increased risk of respira-

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tory tract infection: this possible link to stroke now needs to be investigated. This theory is supported by data from the Newcastle Heart Project showing that plasma concentrations of IgG and staphylococcal toxin are significantly higher in South Asian than European white populations.[12 13]

Although smoking is common in Bangladeshi men and almost certainly contributes to explaining some of the high risk, it is uncommon in Bangladeshi women.[2 6] Chewing tobacco as paan (betel leaf) is common in both sexes, however, and in future epidemiological studies researchers should ascertain total tobacco consumption, as well as using more stringent methods than hitherto for collecting accurate data.[14]

We propose that the explanation for high rates of stroke in Bangladeshis lies in their heavier burden of some established risk factors, their socioeconomic deprivation, and some novel risk factors that are yet to be characterised. Pending deeper understanding of the causes, doctors should be aware of the high risk of stroke and stroke fatality in Bangladeshis even in the absence of raised blood pressure.

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Diabetes and the quality and outcomes framework

Successful UK initiative highlights inequity of investments between sectors

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The rapidly rising prevalence of diabetes in the United Kingdom demands an effective response from healthcare services.[1] British general practitioners were among the first doctors in primary care worldwide to manage many aspects of diabetes care in their own practices,[2] and by the millennium were providing systematic diabetes care.[3] Primary care based interventions are cost effective—countries with strong primary healthcare systems have lower healthcare costs and healthier populations.[4] The 2003 general medical services contract signalled the government's determination to invest in evidence based interventions in primary care and to encourage further expansion of chronic disease management, including diabetes care, into general practice.[5] The contract introduced a quality and outcomes framework, designed to monitor the quality of the delivery of primary care.

In this week's *BMJ* Campbell and colleagues report that general practitioners were already improving effective care for three of the diseases covered by the framework.[6] One of these was diabetes, which is assessed by 18 clinical indicators in the general medical services contract.[7] Contract data shows the prevalence of diabetes is 3.3% in England and Scotland, 3.8% in Wales, and 2.8% in Northern Ireland, and in England more than 93% of general practices achieved the maximum points for diabetes care.[w1] Most participating practices have set up active patient registers to facilitate call and recall for consultations.

The new general medical services contract built on the rigorous analyses undertaken to develop the four national service frameworks for diabetes—one for each country in the United Kingdom.[8] The contract negotiators insisted that the new contract would be the same throughout the UK and largely ignored the patient focused elements such as information, education, and empowerment in the frameworks. The contract focuses on pharmaceutical interventions

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